

17. (New) The ferrule of claim 15 wherein said capillary comprises a material such as zirconia.

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18. (New) The ferrule of claim 15 wherein said flange comprises a material including resins such as PBT containing glass fiber, poly-etherimide and a liquid crystal polymer containing glass fiber.

19. (New) The ferrule of claim 18 wherein said capillary comprises a material such as zirconia.

REMARKS

Reconsideration and allowance of the application are respectfully requested.

In the Office Action of November 18, 2002, claims 1-9 were pending in the application. Claims 3-5, 8 and 9 were indicated as allowable if rewritten in independent form. Claims 1, 2, 6 and 7 were rejected under 35 U.S.C. §102(b) as being unpatentable over Kurokawa et al. Those rejections are respectfully traversed.

First of all, the rewriting of allowable dependent claims 3-5, 8 and 9 will be deferred pending allowance of the remaining claims.

Claims 1, 2, 6 and 7 were rejected under 35 U.S.C. §102(b) as being anticipated by Kurokawa et al 4,479,910. It is respectfully submitted that Kurokawa does not show nor even remotely suggest Applicant's disclosed and claimed invention.

In particular, Applicant has disclosed and claimed a unique ferrule for an optical fiber connector, the ferrule being a high-precision component yet very simple to manufacture. The ferrule includes a capillary having a separate flange molded thereabout to facilitate mounting the capillary in an optical fiber connector. The ferrule is fabricated by a very simple process shown best in Figures 3 and 4 wherein the capillary simply is placed in a mold 20, and a plastic material 29 is injected into the mold to form the flange. The fabrication of the ferrule is just that simple! Yet the ferrule construction provides huge advantages.

As stated on page 1, lines 21-22, capillary 12 can be made from a well-known material such as zirconia or the like, using a high-precision fabrication process. This has the advantage

of being able to precisely center hole 11 (Fig. 2) and the optical fiber which will extend therethrough. However, it would be difficult to fabricate the capillary with flanges or other mounting features in a high-precision fabrication process using such materials as zirconia. Consequently, flange 14 is molded as a separate component about the capillary and can be molded of a different material. Examples of suitable molding materials include resins such as PBT containing glass fiber, poly-etherimide, liquid crystal polymer containing glass fiber or the like (page 2, lines 19-21).

From the foregoing, it can be seen that by providing the capillary and the flange of two different materials, the capillary can be made with one material which allows for a high-precision fabrication process, and the flange can be made of a different material which allows for a simple injection molding process.

The Kurokawa reference does not show nor even remotely suggest the product and method as described above and claimed by Applicant. Ferrule 20 in Kurokawa is a one-piece structure of a homogeneous and identical material. Ferrule 20 does not have a capillary with a separate flange molded thereabout. Flange 20B of Kurokawa is molded integral with and of the same material as capillary 20A. As stated in column 5, lines 25-30 of Kurokawa: "A plug ferrule 20 is a plastic mass molded in one body consisting of a cylinder 20A in which an optical fiber is inserted and a flange 20B molded in one body with the cylinder 20A to surround the external surface of the center portion of the cylinder 20A (emphasis added)." Therefore, the one-piece ferrule of Kurokawa cannot possibly provide the advantages of the invention herein, as described above.

Although it is believed that original independent claims 1 and 7 expressly or inherently set forth a separate flange molded on a previously provided capillary, these claims have been amended to clearly define the invention over Kurokawa. In particular, claim 1 now calls for the flange to be molded as a separate component from the capillary onto the capillary outer surface. Method claim 7 has been amended to call for the step of providing the capillary and then molding the flange onto an outer surface of the previously provided capillary. Clearly, these claims patentably distinguish over the one-piece ferrule structure of Kurokawa under 35 U.S.C. §102(b) and the claims clearly are nonobvious in view of Kurokawa under 35 U.S.C. §103.

New claims 10-19 have been added to afford Applicant a scope of protection to which he is entitled in view of the cited prior art in this application, particularly, the Kurokawa reference. All of these new dependent claims center around the separateness between the flange and the capillary, particularly the different materials of those components.

In view of the foregoing, reconsideration of the application, allowance of claims 1-19, and passing the application to issue are respectfully requested.

Respectfully submitted,

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Version of Amended Claims Showing the Changes Made

1. (Amended) A ferrule for an optical fiber connector comprising:

a capillary having a pair of opposing ends, an outer surface extending between the opposing ends and a hole extending between the opposing ends for insertion of an optical fiber strand therein; and

a flange molded as a separate component from the capillary onto the capillary outer surface intermediate the capillary opposing ends such that the capillary outer surface proximate each opposing end is not covered by the molded flange.

7. (Amended) A method for manufacturing a ferrule for an optical fiber connector comprising the [step] steps of providing a capillary having opposing ends, and molding a flange onto an outer surface of [a] the previously provided capillary intermediate the opposing ends of the capillary such that the capillary outer surface proximate each opposing end is not covered by the molded flange.